

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

# (12) UK Patent Application (19) GB (11) 2 275 597 (13) A

(43) Date of A Publication 07.03.1994

(21) Application No 9403910.4

(22) Date of Filing 01.03.1994

(30) Priority Data

(31) 9304356

(32) 03.03.1993

(33) GB

(71) Applicant(s)

Carstyle Safety Products Ltd

(Incorporated in the United Kingdom)

34 Gratton Road, Queens Park, BEDFORD, MK40 4EF,  
United Kingdom

(72) Inventor(s)

David Lennox-Lamb

(74) Agent and/or Address for Service

Forrester Ketley & Co

Forrester House, 52 Bounds Green Road, LONDON,  
N11 2EY, United Kingdom

(51) INT CL<sup>5</sup>

B60R 22/12

(52) UK CL (Edition M )

A3V VRA

(56) Documents Cited

GB 1268761 A

The Motor, 9 November 1960, page 604.

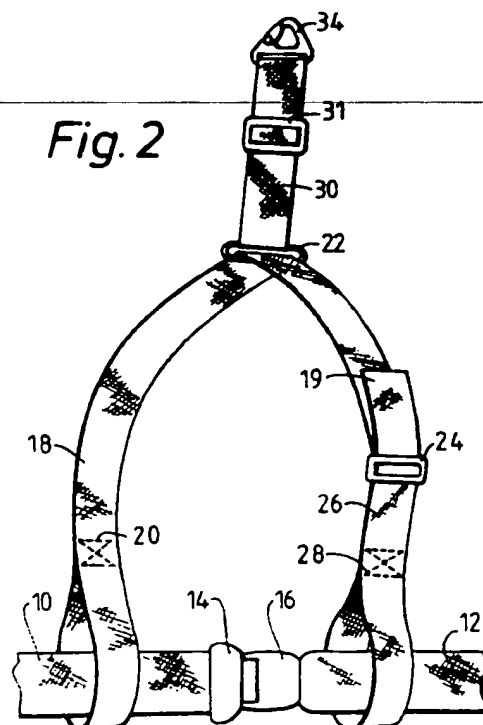
(58) Field of Search

UK CL (Edition M ) A3V VRA VRJ

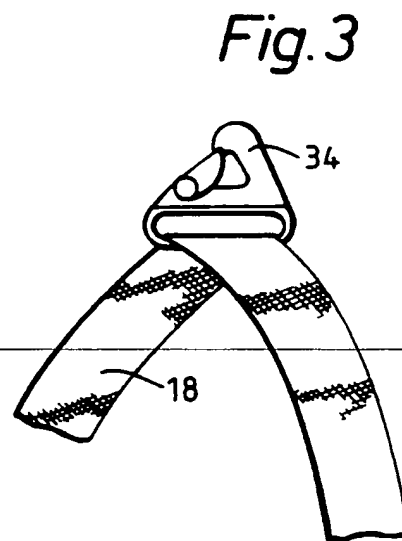
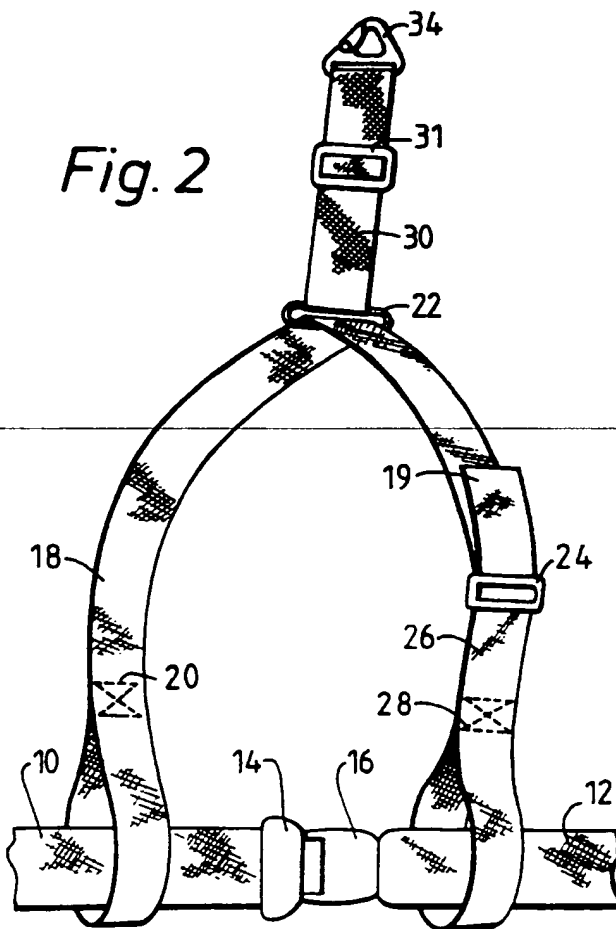
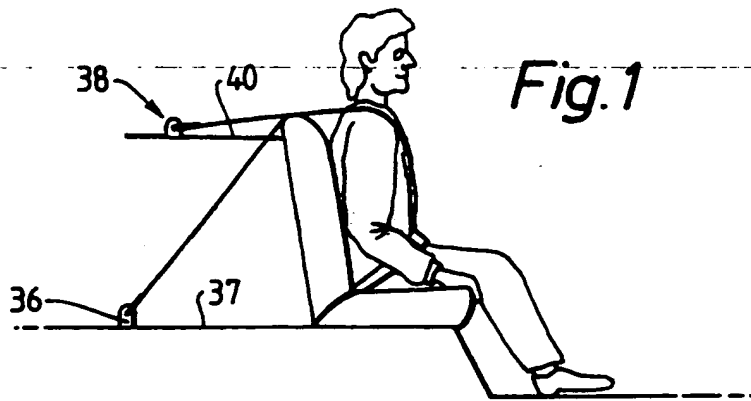
INT CL<sup>5</sup> B60R 22/12

(54) Adaptor arrangement for lap-belt

(57) The adaptor converts a lap-belt for a passenger seated in a vehicle into a full harness, and comprises shoulder straps provided by webbing length 18 and a connected webbing length 26, each having a respective loop for receiving a part 10, 12 of the lap-belt. The webbing length 18 passes through a ring 22 connected to an anchoring strap 30 carrying an anchoring plate 34 or, alternatively, it passes directly through a slot in an anchoring plate 34. The anchoring plate 34 is in either case secured to the vehicle structure behind the passenger seat occupied by the passenger wearing the harness.



GB 2 275 597 A



## DESCRIPTION OF INVENTION

**Title: "Adaptor arrangement for lap-belt"**

THIS INVENTION relates to an adaptor arrangement intended to allow a lap-belt-type safety belt for a passenger seated in a motor vehicle, for example, to be converted into a full harness safety restraint.

In some motor vehicles, rear passenger seats, for example, are equipped with lap-type seat belts, similar to those used in aircraft passenger seats, comprising two belt lengths which extend from respective securing points on the seat base on either side of the passenger to complementary buckle parts which, in use, are fastened in the middle of the passenger's lap, the buckle mechanism generally incorporating some form of manually operable quick-release mechanism. It has become apparent that, in a crash situation, lap-type seat belts may be ineffective in preventing injury to passengers and may, indirectly, be responsible for producing severe injuries, in particular back injuries.

It is an object of the present invention to provide a means whereby a lap-type seat belt can readily be converted into a full-harness type restraint which, in the event of an accident, provides support and restraint for the torso of the wearer.

According to one aspect of the invention there is provided a lap-belt adaptor arrangement for converting a lap-belt into a full-harness comprising shoulder straps each carrying, at its free end, a loop through which a respective portion of a lap belt can be extended and anchor

means adapted to provide a connection between at least one anchoring point on a vehicle to which the adaptor arrangement is fitted to portions of the shoulder straps located rearwardly of the seat for which the lap belt and adaptor arrangement are provided.

The shoulder straps may include a length of webbing passing through an aperture or slot defined by a fitting secured to said anchoring point or carried at one end of a strap, the other end of which is secured to said anchoring point.

Embodiments of the invention are described below by way of example with reference to the accompanying drawings in which:-

FIGURE 1 is a schematic side elevation view showing a passenger seated in a rear passenger seat of a motor vehicle and wearing a full restraint harness formed by an apparatus embodying the present invention, in combination with a lap belt,

FIGURE 2 is a diagrammatic front perspective view showing an adaptor arrangement embodying the invention fitted to a lap belt and

FIGURE 3 illustrates a variant of the arrangement of Figure 2.

Referring to Figure 2, a conventional lap belt comprises two belt parts 10, 12 respectively each having one end (not shown) secured by conventional means to the vehicle on a respective side of the respective passenger position, and its other end carrying a buckle part 14, 16. To fasten the lap belt, the two belt parts 10, 12, are

extended around either side of a passenger seated in the seat, from their respective anchoring points on either side of the passenger, around the passenger's hips and across the passenger's lap and the two belt parts 14, 16, are connected in the middle of the passenger's lap. The illustrated arrangement embodying the invention comprises, in the embodiment illustrated in Figure 2, a length of webbing 18 which at one end is folded over onto itself and stitched to itself as indicated at 20 to form a first loop through which, in use, the lap belt part 10 is extended. The length of webbing 18 extends from the last-mentioned loop, through an aperture in a metal ring or plate 22 to an adjusting buckle 24 to which is secured one end of a further length 26 of webbing which is formed, at its other end, into a further loop secured by stitching at 28. The loop formed at the end of the length 26 of webbing receives, in use, the lap belt part 12 as indicated. The configuration of buckle 24 and the path followed, through the buckle 24, by the webbing part 18, is such that, in normal use, the webbing parts 18 and 26 are effectively fixed together, to form, in effect, a single strap extending from one lap-belt receiving loop to the other but that the position of the buckle 24 along the web portion 18 can be manually adjusted to adjust the effective length of the strap extending between the two loops. The reference 19 indicates the free end of the web part 18. It will be appreciated that, if preferred, the buckle 24 may be carried by the end of webbing part 18, with the strap 26 extending adjustably through the buckle 24 (in which case the reference 19 may be regarded as indicating the free end of the webbing part 26). Such webbing and buckle arrangements are well known, per se in the art, and will not be described in detail here.

In the arrangement shown in Figure 2, the plate or ring 22 is connected by a webbing connector 30 to an anchoring plate 34 for attachment to an anchor point (such as that referenced 36 in Figure 1), secured to the body of the vehicle. The webbing connector 30 preferably incorporates a portion looped through a buckle 31, in manner known per se whereby the effective length of the connector 30 can be adjusted manually. In the variant illustrated in Figure 3, the webbing part 18 passes directly through a slot provided in anchoring plate 34 which, as in the other variant, is adapted for securing to an anchor point on the vehicle, such as the anchor point 38 in Figure 1.

The webbing 18, 26 forms two shoulder straps of the harness which, in use, extend upwards from the lap belt (10, 12) over the front of the wearer's thorax and over respective shoulders of the wearer, on respective sides of the wearer's neck, to the ring 22 or plate 34 which is located rearwardly of the seat occupied by the wearer and thus rearwardly of the wearer.

It is intended that, in general, the arrangement of Figure 2, with the additional strap 30, will be utilised in estate cars or hatchbacks where the respective anchor point 36 will be secured to the floor 37 of the vehicle behind the rear seat or to the boot floor (in the case of a hatchback) and that the arrangement of Figure 3 will be used in the rear seat of a saloon car where the vehicle body generally provides a shelf, indicated at 40 in Figure 1, behind the rear passenger seat and approximately at the level of the top of the back of said seat.

Preferably, the anchoring plate 34 in either embodiment incorporates a hook adapted to engage in an eye

of an eye bolt fixed to the car bodywork and providing the respective anchoring point 36 or 38. The plate 34 has a pivotable locking member spring-biased towards a position in which it closes the entrance to the opening defined by the hook, in an arrangement similar to that adopted in karabiners for mountain climbing etc. This arrangement allows rapid fitting and detachment of the plate 34 from its anchoring point whilst at the same time preventing accidental detachment.

Fitting of the adaptor arrangement described to a vehicle equipped originally only with lap-belts for the rear seat passengers, for example, is straightforward, requiring only the drilling of holes to receive the eye bolts, and subsequent fitting of the anchoring plates 34, passing of the lap belt parts 10, 12 through the respective shoulder-strap loops and adjustment of the buckles 24, 34, to suit the individual passenger.



**CLAIMS**

1. A lap-belt adaptor arrangement for converting a lap-belt into a full-harness comprising shoulder straps (18, 26) each carrying, at its free end, a loop through which a respective portion (10, 12) of a lap belt can be extended and anchor means (30, 31, 34) adapted to provide a connection between at least one anchoring point (36, 38) on a vehicle to which the adaptor arrangement is fitted, and portions of the shoulder straps (18, 26) located rearwardly of the seat for which the lap belt and adaptor arrangement are provided.
2. A lap-belt adaptor arrangement according to claim 1 wherein the shoulder straps include a length (18) of webbing passing through an aperture or slot defined by a fitting (22, 34) secured to said anchoring point (38) or carried at one end of a strap (30), the other end of which is secured to said anchoring point (36).
3. A lap-belt adaptor arrangement substantially as hereinbefore described with reference to and as shown in Figures 1 to 3 of the accompanying drawings.
4. Any novel feature or combination of features described herein.

**7. Miner's report to the Comptroller under Section 17 (The Search report)**

Application number  
GB 9403910.4

(i) UK Cl (Ed.M)      A3V (VRA, VRJ)  
(ii) Int Cl (Ed.5)      B60R.22/12

**Search Examiner**  
**D BUCKLEY**

**Date of completion of Search**  
**29 MARCH 1994**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant  
following a search in respect of  
Claims :-  
1-3

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&: Member of the same patent family; corresponding document.**

<b>Category</b>	<b>Identity of document and relevant passages</b>	<b>Relevant to claim(s)</b>
X	GB 1268761                (IRVIN GB LTD) See belt Sections 12, 13, Figure 1	1 and 2
X	"The Motor", 9 November 1960, page 604	1 and 2

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).